

Telephone Headset Amplifier

This circuit goes between a telephone and a headset. The project has a headset cord and plug (cut from a cheap cell phone headset) on the input and a suitable jack on the output. The speaker signal passes through this circuit, but the microphone signal is passed straight from the plug to the jack.

This circuit is specifically designed for ultra-low battery consumption. It uses a special control circuit (Q3, Q4 and Q5) to regulate the power amplifier's quiescent current. Also, effort was spent to design an auto-on circuit (Q10 through Q14) that draws only 1.5 uA, yet has 15mV sensitivity.

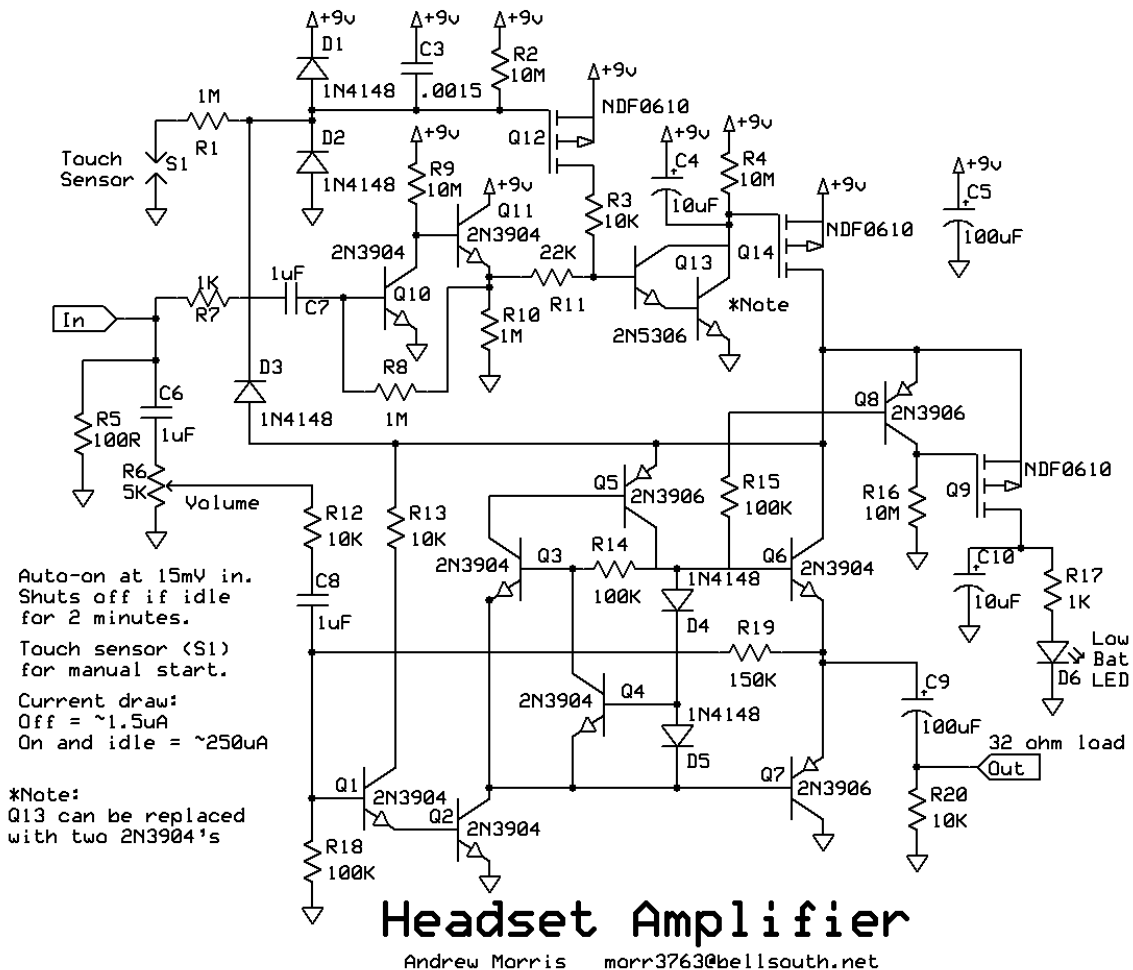


Figure 1. Schematic



Figure 2. Top view

The circuit was built into a small project box (Radio Shack P/N 270-1801). The volume control came from Mouser Electronics. I don't know the part number.



Figure 3. Front view



Figure 4. Inside view



Figure 5. Inside close-up view.

I had to cut the top off an old 9-volt battery to make the battery connector. As you can see, there is no room for an off-the-shelf part. I drilled a small hole in the middle of the connector to put the wires through as a strain relief.

You can also see that I put clear shipping tape over the electronics. That was because the electronics was scraping the volume control. I got all the components on the circuit board

except the low battery circuit and the touch switch components, which are soldered directly onto the bottom side of the board.

I made a touch switch (for manual turn-on) out of two small screws, because there was no room for an off-the-shelf switch. The auto-on circuit has been so reliable that I have never had to use it. I do prefer to use it when I get put on hold with a dead line and the unit times out. With digital technology, phone connections are extremely clean nowadays. The amplifier makes a funny noise and the low battery light comes on right when the unit shuts down. The unit would come back on when somebody talks on the other end.

I built this project originally for my cell phone, but RF from the cell phone made it buzz. I use it on my land line, now.